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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BAYER CORPORATION
100 BAYER ROAD
PITTSBURGH, PA 15205-9741

EXAMINER

SERGEANT, RABON A

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/555,921

Applicant(s)

KAUFHOLD ET AL.

Examiner

Rabon Sergent

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,12,13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,12,13 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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1. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Within line 23 of the claim, the language, "said apparatus", lacks antecedent basis.

2. Claims 1, 12, 13, and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Clear support has not been provided for the invention as claimed.

Specifically, it is unclear where support exists for the limitations pertaining to the mixing of reactants within an apparatus, the removal of the resulting mixture from the apparatus, and the introduction of the mixture into a reactor. The examiner has considered the specification and the examples, and the position is taken that the disclosures pertaining to the sequence of mixing and reacting are ambiguous to the point that no clear and definitive process sequence can be ascertained from the specification. It appears that applicants are similarly unclear as to what the disclosed process entails. To support this position, a comparison of applicants' current claims and response and applicants' past response of February 9, 2004 is useful. Currently, the claims require that mixing and reacting occur within separate equipment; however, within the second paragraph of page 7 of the response of February 9, 2004, applicants definitively stated that the process of the claims occurred within a single static mixer. Admittedly, the claims have been amended to now require the use of separate equipment; however, the question remains with respect to which set of claims has support. Pages 2 and 3, specifically page 3, line 4, of the

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specification specifies only that components A) and B) are premixed in a reactor; therefore, the recited process within pages 3 and 4 in no way provide for the use of multiple equipment as claimed. Furthermore, it is by no means clear from pages 8 and 9 of the specification that mixing and reacting are to occur in separate equipment. Page 8 specifies that components (A) and (B) are mixed in a “reactor” and that prior to introduction they are mixed “separately from each other”. Page 9 ambiguously indicates that any type of reactor can be used to convert the mixture into TPU. However, it is further stated on page 9 that static mixers are preferably used for polyaddition so that thorough mixing can be obtained (this appears to refer back to the mixing discussed on page 8 and supports the position that a single piece of equipment is used), and it is further stated that twin shaft extruders may be used and that the first part of the extruder can be used to heat up the isocyanate component (again, this supports the disclosure on page 8 and further supports the position that the process occurs in a single piece of equipment since heating, mixing, and reacting are occurring in a single extruder). With respect to the embodiment of claim 1 concerned with the initial use of an extruder and claim 15, it is not seen that any suggestion exists within the specification that an extruder is used as the initial mixer and that a second extruder or reactor is used for polyaddition. Given the ambiguous language of the specification and the contradictory arguments of the applicants, the position is ultimately taken that clear support for the invention as claimed has not been provided and that applicants have failed to provide a clear, concise written description of the invention.

3. Applicants have argued that the language, “The mixture obtained in this way is then converted into TPU in any type of reactor”, at page 9, lines 4 and 5 of the specification provides support for the claims. The examiner has previously considered this language, and the position

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is taken that this language does not provide support for the use of separate equipment in the sequence claimed. When the argued language of page 9 is considered with the language of page 8, lines 16+, it appears clear that mixing and reaction are occurring in a single reactor, and that the aforementioned argued language merely defines the type of reactor. The examiner has again considered argued Example 1; however, it is not seen that Example 1 provides support for the methods of claims 1 and 15. The argued example is vague and devoid of definitive language that supports the process recited in the claims. Furthermore, no clear distinction has been made between the static mixer and reaction tube, and no language is present to suggest that the static mixer and reaction tube constitute separate pieces of equipment.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchmeyer et al. ('252) in view of Rausch et al. ('964).

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Kirchmeyer et al. disclose the continuous production of polyurethane elastomers, wherein the reactant components are rapidly mixed within a static mixer prior to reaction within a second static mixer, so as to obtain more uniform mixing and reaction. Applicants' claimed tubular reactor is considered to be met by the disclosed second static mixer.

6. While the primary reference fails to disclose the use of reactant streams having comparable temperatures, the use of comparable temperatures for reactant streams used for the continuous production of thermoplastic polyurethanes was a known and conventional practice at the time of invention. Rausch et al. are concerned with the production of a thermoplastic polyurethane, and the examples of Rausch et al. clearly disclose that the two reactant streams were heated to the same temperature of 140°F (60°C).

7. Therefore, in accordance with the goals, of the primary reference, of obtaining more uniform and homogeneous mixtures, the position is taken that one would have been motivated to introduce the streams for mixing at comparable temperatures (as was done in the secondary reference), so as to obtain a reactant composition having increased uniformity and increased efficiency of formulation.

8. Applicants' arguments have been considered; however, they are not deemed persuasive. The examiner has set forth the requisite motivation to modify the references; contrary to applicants' arguments, the motivation stems from the teachings of the prior art. Though the respective process steps differ between the references, the references are fundamentally drawn to the same goal, namely the continuous production of thermoplastic polyurethanes. Therefore, since the respective references are drawn to the production of equivalent polymers employing equivalent reactions, the skilled artisan would have been motivated to consider the teachings of

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the references as a whole, including the teachings pertaining to temperature conditions.

Furthermore, as has been previously stated, the examiner has considered the examples of the application for showings of unexpected results; however, contrary to applicants' arguments, the examples are not commensurate in scope with the claimed reactant species or conditions. The examples employ a very limited number of reactant species, temperature conditions, and residence times and limited process steps; accordingly, these limited examples are not adequately representative of the scope of the claims.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (571) 272-1079.

R. Sergent
March 1, 2005


RABON SERGENT
PRIMARY EXAMINER